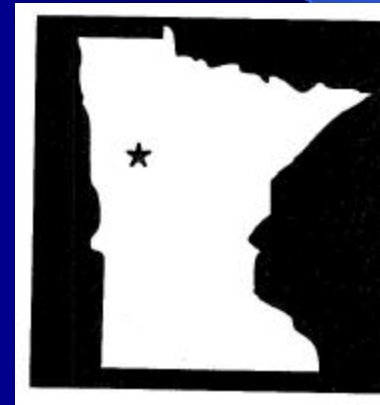


City of Detroit Lakes

- Detroit Lakes, Minnesota is located 45 miles east of Fargo, North Dakota. The town developed around a large lake and depends upon tourism and summertime activities for its economic base. Detroit Lakes Public Utilities Department decided to participate in the ACTT project to complete the community's contaminant source inventory (CSI) and spread awareness to the community about the importance of groundwater protection. The goal of the CSI is to locate private wells that draw groundwater from the same aquifer as the City of Detroit Lakes, locate underground storage tanks and other significant contaminant sources, and educate landowners and homeowners on the importance of wellhead protection.



Demographic Information

- **Population:** 7,400
- **City Government Budget:** \$15,000.00 from 2000 – 2002 specifically for wellhead protection efforts and youth education activities related to groundwater protection.
- **Groundwater Information:** Detroit Lakes' wells draw water from a confined aquifer that recharges just north of the city. The wells average 230 feet deep. The static groundwater level is six feet. Detroit Lakes currently treats its drinking water.
- **Number of Wells:** The wells are all located within the city limits.
- **Geographic Location of Wells:** The wells are all located within the city limits.
- **Economic Background:** Detroit Lakes depends on light manufacturing and tourism for its economic base.

Conducting a CSI

- Detroit Lakes began working with wellhead protection in 1996. Its source water delineation was completed using information from a pump test of its municipal wells and computer modeling by the Minnesota Department of Health and Minnesota Rural Water Association. In 2000, the Detroit Lakes City Council approved the boundaries of the wellhead protection area (WHPA). Work continued into the summer of 2002 when the Public Utility Department began locating private wells that may be connected to the city's source water aquifer. Private landowners were contacted, offered a free water test to identify nitrates, and briefed on the importance of groundwater protection. The City has also been searching for the underground fuel tanks within the WHPA.
- The City has been using GPS to locate both wells and underground storage tanks. A part-time GIS technician was hired to complete the data logging and mapping. The CSI will be an on-going process as development continues and different sources of potential contamination are found.

Technology Used

- **Hardware:** 1 Garmin GPS receiver
- **Software:** ESRI's ArcView 3.2a on Microsoft Windows 98
- **Data:** Well logs, wellhead protection boundaries, and digital orthophotos provided by the Minnesota Department of Health; well and underground storage tank locations provided by Becker County.

Technology Operated By:

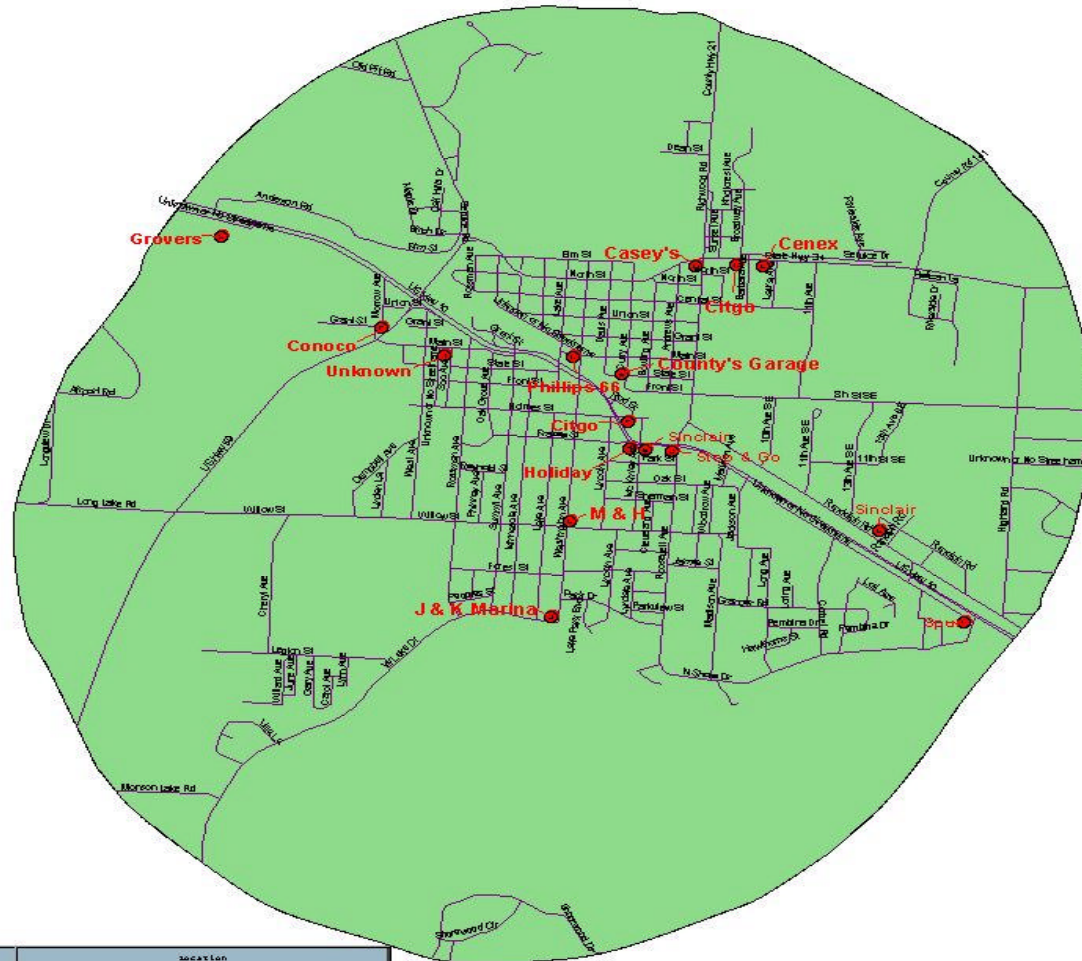
- 1) Detroit Lakes used a Garmin GPS receiver to locate private wells and underground storage tanks within the WHPA.
- 2) The City hired a part-time GIS/water planner to compile and organize the information to be used in the GIS.
- 3) Information has been gathered and organized for use by the City and other local agencies.

Purpose of Technology Used:

- The purpose of acquiring GIS and GPS technologies was to establish a database which can then be used to better manage potential contaminants to Detroit Lakes' source water aquifer. Along with the database, maps can now easily be produced and used in meetings or to educate the public and spread awareness throughout the community concerning the importance of wellhead protection.

Detroit Lakes Well Head Protection Map

Created on 8/9/02

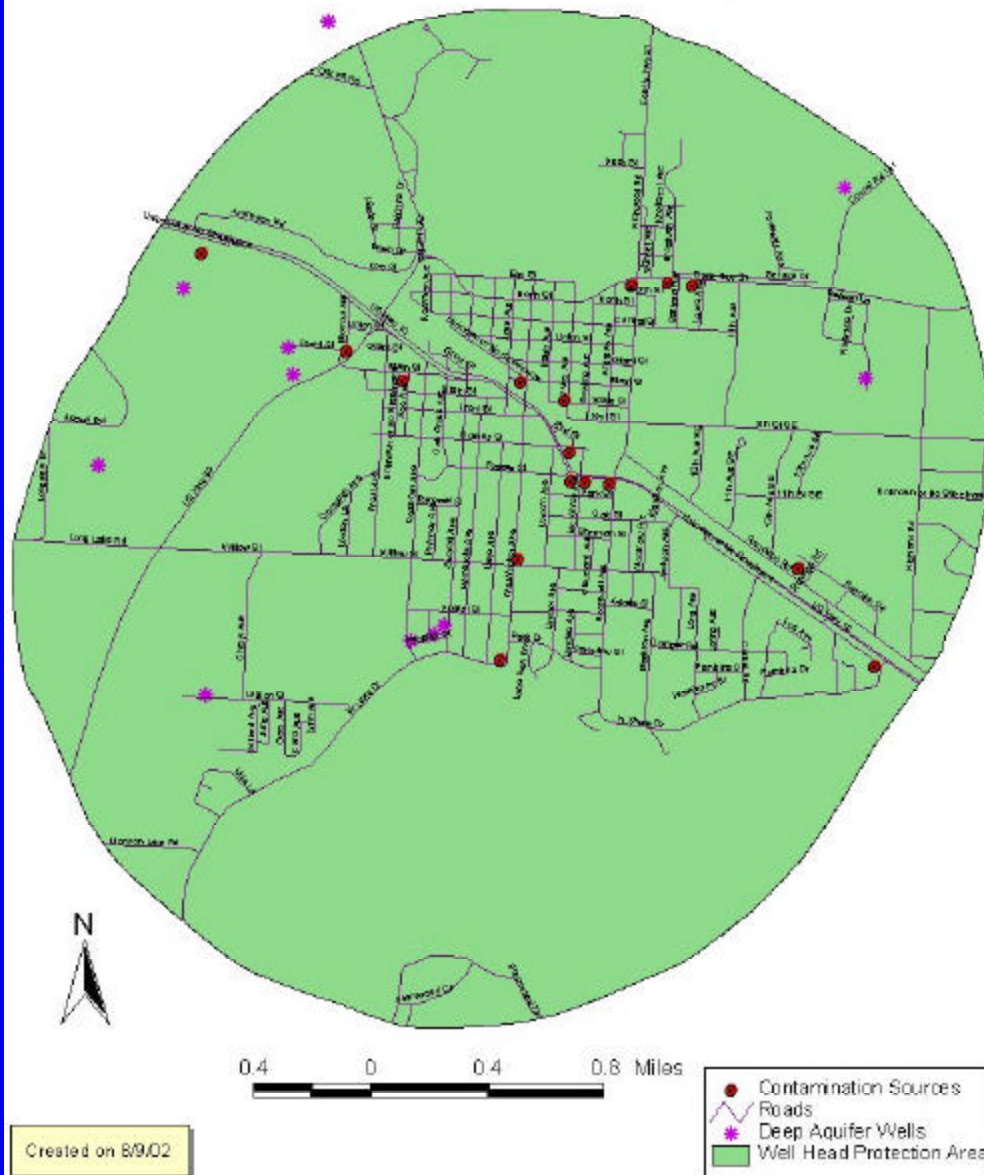


NAME	LOCATION
Ninela's	Intersection of Sandhild Rd & Main Ave
Unknown	Intersection of 3rd Ave & Main St
Citygo	Intersection of Hwy 31 & Main Ave
Holiday	Intersection of Hwy 18 & McKinley Ave
Ninela's	Intersection of Hwy 18 & McKinley Ave
Wag & Go	Intersection of Hwy 18 & Roosevelt Ave
County's Garage	Intersection of State St & Curry Ave
J & K Marina	Intersection of Washington Ave & Main St
Casey's	Intersection of Hwy 31 & Main Ave
Phillips 66	Intersection of Washington Ave & Main St
Citygo	Intersection of Hwy 18 & Main Ave
Casey's	Intersection of Hwy 31 & Main Ave
M & F	Intersection of Washington Ave & Main St
Spd	Intersection of Hwy 18 & Main Ave
Grover's	South side of Hwy 18 before Grant
Conoco	Intersection of Hwy 31 & Main Ave

0.4 0 0.4 Miles

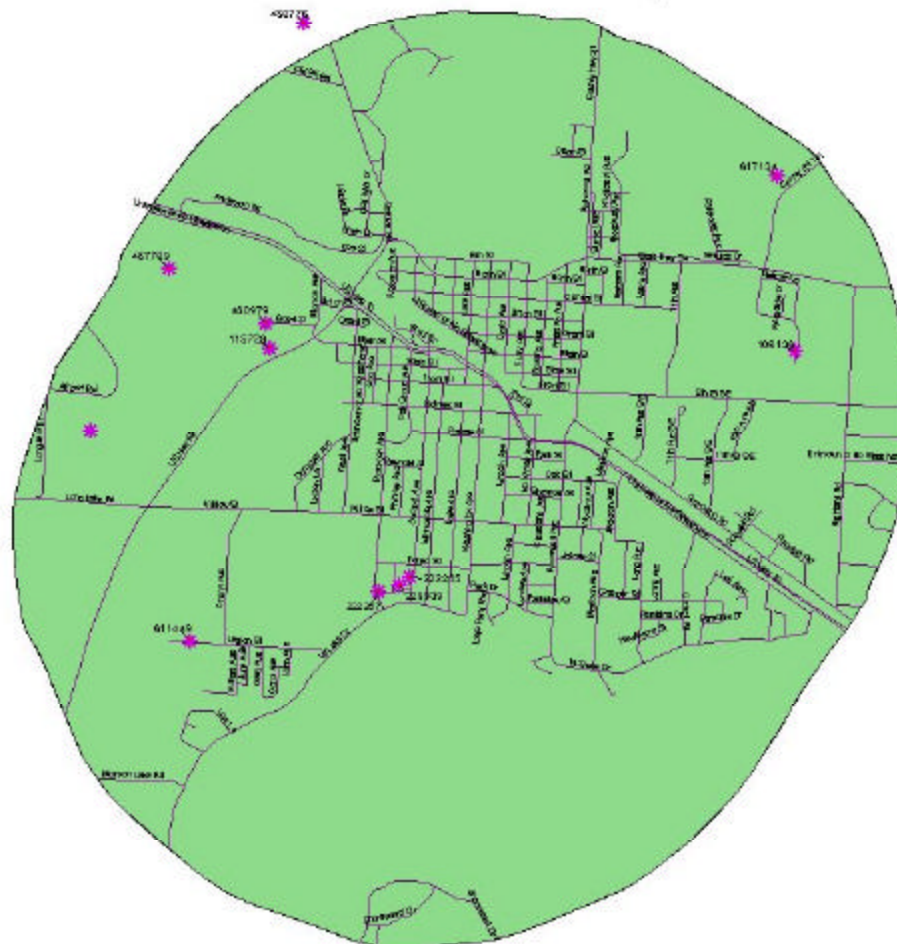


Detroit Lakes Well Head Protection Map



Detroit Lakes Well Head Protection Map

Created on 8/9/02



0.4 0 0.4 0.8 Miles



- Deep Aquifer Wells
- Roads
- Well Head Protection Area

Costs of Technology Used:

- 1) The Garmin GPS unit was borrowed from Becker County.
- 2) ArcView 3.2a - \$995.00 (municipality discount).

Benefits of Technology Used:

- Establishing a CSI and educating the public on groundwater protection has proven easier using GIS and GPS technologies. The ability to create a database with concrete information is beneficial to not only the management of potential contaminants, but also for locating water valves, storm water discharge points, and manhole covers. Using GIS will also allow Detroit Lakes to easily update the CSI as land uses change and development continues within the WHPA.
- GIS can also be used as an educational tool. Information from GIS can be shared with other agencies and local departments such as the fire marshal. All of the data resources that are used locally by various agencies can be combined and shared into one GIS.

- **Economic:** Detroit Lakes considers all the work required to gather and organize information for the CSI using GIS as preventative maintenance. Knowing where potential contaminants and other threats to its source water supply are located allows it to work toward preventing contamination that can potentially cost a great deal to clean up in the future.

Detroit Lakes will not have to spend money estimating where to install monitoring wells (if needed) to detect contamination or monitor a potential contaminant source.

- **Educational:** Detroit Lakes is well-known across the state of Minnesota as a hardworking Groundwater Guardian Community and for excellence in groundwater education activities. It will incorporate the CSI information with their previous WHP education. Education activities have included youth festivals at the two elementary schools, and booths at the Becker County Fair and a Builders Convention.

Challenges

- Detroit Lakes' biggest challenge was finding the time to train an in-house staff member to use GIS. The City hired a GIS/water planner that had previous college training and experience using GIS. Obtaining this experience on staff allowed its GIS to be developed rapidly. The staff member will also be available to train others and help explain the theory behind using a GIS.

Lessons Learned:

- It is important to find someone with the correct training in GIS. Gaining the necessary technical expertise was a valuable step for Detroit Lakes. Public relations have also been an important part of the process.
- Previous wellhead protection education activities have paid off for Detroit Lakes. Groundwater protection education was evident as Detroit Lakes staff contacted homeowners in the field. Numerous citizens were already aware of the WHPA and the importance of working to protect their source water supply. Informing the public is essential in order for the work to be completed efficiently and effectively.

Security Issues:

- Detroit Lakes does not plan to disclose specific geographical locations of its three municipal wells or reservoirs to the general public.

For More Information Contact:

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